

PATENT APPLICATION  
Q63051

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re application of

Toru TSUKADA, et al.

Appln. No.: not yet assigned

Confirmation No.: not yet assigned

Group Art Unit: not yet assigned

Filed: March 16, 2001

Examiner: not yet assigned

For: FEED SCREW DEVICE

**PRELIMINARY AMENDMENT**

**BOX PATENT APPLICATION**  
Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to an examination on the merits of the above-identified application, please amend the same as follows:

**IN THE SPECIFICATION:**

**Amend the specification by inserting the following before the first line on page 1:**

**--CROSS REFERENCE TO RELATED APPLICATION**

This is a division of Application No. 08/877,518 (Confirmation No. 6133) filed June 17, 1997, the disclosure of which is incorporated herein by reference.--

**Replace page 16, last paragraph, as follows:**

Figures 5(a) and 5(b) are views to show a lubricant supply device according to the first embodiment of the invention; 5(a) and 5(b) are a sectional view and a front view of the lubricant supply device respectively;

**Replace page 17, 1<sup>st</sup> through 6<sup>th</sup> paragraphs, as follows:**

Figures 6(a) and 6(b) are views to show a retaining ring according to the first embodiment of the invention; 6(a) and 6(b) are a side view of the retaining ring and a front view from the outside of the retaining ring;

Figures 7(a) and 7(b) are illustrations to explain the effects of notches and expansion members according to the first embodiment of the invention; 7(a) shows a state before the expansion members are inserted and 7(b) shows a state after the expansion members are inserted;

Figure 8 is a sectional view to show the main part of a ball screw according to a second embodiment of the invention;

Figures 9(a) and 9(b) are views to show a lubricant supply device according to the second embodiment of the invention; 9(a) and 9(b) are a sectional view and a front view of the lubricant supply device respectively;

Figures 10(a) and 10(b) are views to show an expansion member according to the second embodiment of the invention; 10(a) and 10(b) are a side view and a front view of the expansion member respectively;

Figures 11(a) and 11(b) are views to show a retaining ring according to the second embodiment of the invention; 11(a) and 11(b) are a side view of the retaining ring and a front view from the outside of the retaining ring;

**IN THE CLAIMS:**

**Please cancel claims 1-7 without prejudice and/or disclaimer.**

**Please amend the claims as follows:**

8. (Amended) A feed screw device comprising:  
a screw shaft;  
a nut member threadably engaging an outer periphery of the screw shaft;  
a lubricant supply device fixed to said nut member, said lubricant supply device coming in contact with the outer peripheral surface of said screw shaft and having a predetermined elasticity; and

means for deforming at least the outer periphery of said lubricant supply device in the circumferential direction,

in which said nut member is provided with a cap-shaped retaining ring which has a recessing portion for accommodating said lubricant supply device.

9. (Amended) A feed screw device comprising:

a screw shaft;

a nut member threadably engaging an outer periphery of the screw shaft;

a lubricant supply device fixed to said nut member, said lubricant supply device coming in contact with the outer peripheral surface of said screw shaft and having a predetermined elasticity; and

a deforming member which deforms at least the outer periphery of said lubricant supply device in the circumferential direction,

in which said nut member is provided with a recess portion for attaching said lubricant supply device and a retaining ring for retaining said lubricant supply device within said recess portion, and

in which said deforming member comprises:

a notch formed in the outer periphery side of the lubricant supply device; and

an expansion member formed on said retaining ring and inserted into said notch so as to deform said lubricant supply device in the circumferential direction.

11. (Amended) A feed screw device comprising:

    a screw shaft;

    a nut member threadably engaging an outer periphery of the screw shaft;

    a lubricant supply device fixed to said nut member, said lubricant supply device coming in contact with the outer peripheral surface of said screw shaft and having a predetermined elasticity; and

    means for deforming at least the outer periphery of said lubricant supply device in the circumferential direction,

    in which said lubricant supply device is provided with a plurality of lip parts projected along the circumferential direction toward the inner peripheral surface of said lubricant supply device and come in sliding contact with the outer peripheral surface of said screw shaft.

PRELIMINARY AMENDMENT  
U.S. SERIAL NO. [NOT YET ASSIGNED]

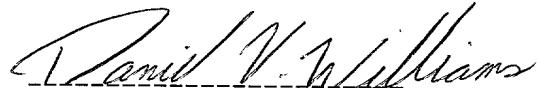
Attorney Docket  
No. Q63051

REMARKS

Claims 8-16 are presented for examination in this divisional application. Claims 8, 9 and 11 are rewritten in independent form. The specification has been amended to make the same editorial changes made in the parent application Serial No. 08/877,518 filed June 17, 1997. Accordingly, entry and consideration of this Preliminary Amendment are respectfully requested, and an early and favorable examination on the merits is earnestly solicited.

Please charge any fees due to maintain the pendency of this application (except the Issue Fee) to our Deposit Account No. 19-4880.

Respectfully submitted,



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Date: March 16, 2001

**APPENDIX**

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE SPECIFICATION:**

**The specification is changed as follows:**

**Insert the following before the first line on page 1:**

**--CROSS REFERENCE TO RELATED APPLICATION**

This is a division of Application No. 08/877,518 (Confirmation No. 6133) filed June 17, 1997, the disclosure of which is incorporated herein by reference.--

**Replace page 16, last paragraph, as follows:**

[Figure 5 is] Figures 5(a) and 5(b) are views to show a lubricant supply device according to the first embodiment of the invention; 5(a) and 5(b) are a sectional view and a front view of the lubricant supply device respectively;

**Replace page 17, 1<sup>st</sup> through 6<sup>th</sup> paragraphs, as follows:**

[Figure 6 is] Figures 6(a) and 6(b) are views to show a retaining ring according to the first embodiment of the invention; 6(a) and 6(b) are a side view of the retaining ring and a front view from the outside of the retaining ring;

[Figure 7 is an illustration] Figures 7(a) and 7(b) are illustrations to explain the effects of notches and expansion members according to the first embodiment of the invention; 7(a) shows a state before the expansion members are inserted and 7(b) [show] shows a state after the expansion members are inserted;

Figure 8 is a sectional view to show the main part of a ball screw according to a second embodiment of the invention;

[Figure 9 is] Figures 9(a) and 9(b) are views to show a lubricant supply device according to the second embodiment of the invention; 9(a) and 9(b) are a sectional view and a front view of the lubricant supply device respectively;

[Figure 10 is] Figures 10(a) and 10(b) are views to show an expansion member according to the second embodiment of the invention; 10(a) and 10(b) are a side view and a front view of the expansion member respectively;

[Figure 11 is] Figures 11(a) and 11(b) are views to show a retaining ring according to the second embodiment of the invention; 11(a) and 11(b) are a side view of the retaining ring and a front view from the outside of the retaining ring;

**IN THE CLAIMS:**

**Claims 1-7 are cancelled without prejudice and/or disclaimer.**

**The claims are amended as follows:**

8. (Amended) [The feed screw device according to claim 1] A feed screw device comprising:

a screw shaft;

a nut member threadably engaging an outer periphery of the screw shaft;

a lubricant supply device fixed to said nut member, said lubricant supply device coming in contact with the outer peripheral surface of said screw shaft and having a predetermined elasticity; and

means for deforming at least the outer periphery of said lubricant supply device in the circumferential direction,

in which said nut member is provided with a cap-shaped retaining ring which has a recessing portion for accommodating said lubricant supply device.

9. (Amended) [The feed screw device according to claim 4,] A feed screw device comprising:

a screw shaft;

a nut member threadably engaging an outer periphery of the screw shaft;

a lubricant supply device fixed to said nut member, said lubricant supply device coming in contact with the outer peripheral surface of said screw shaft and having a predetermined elasticity; and

a deforming member which deforms at least the outer periphery of said lubricant supply device in the circumferential direction,

in which said nut member is provided with a recess portion for attaching said lubricant supply device and a retaining ring for retaining said lubricant supply device within said recess portion, and

in which said [pressing means comprising] deforming member comprises:

a notch formed in the outer periphery side of the lubricant supply device; and

an expansion member formed on said retaining ring and inserted into said notch so as to deform said lubricant supply device in the circumferential direction.

11. (Amended) [The feed screw device according to claim 1] A feed screw device comprising:

a screw shaft;

a nut member threadably engaging an outer periphery of the screw shaft;

a lubricant supply device fixed to said nut member, said lubricant supply device coming in contact with the outer peripheral surface of said screw shaft and having a predetermined elasticity; and

means for deforming at least the outer periphery of said lubricant supply device in the circumferential direction,

in which said lubricant supply device is provided with a plurality of lip parts projected along the circumferential direction toward the inner peripheral surface of said lubricant supply device and come in sliding contact with the outer peripheral surface of said screw shaft.